Learn About the Ocean Shipping Industry! Mitsui O.S.K. Lines, Ltd. (MOL) JOB Exploration Book



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Welcome to the World of Ocean Shipping!

Surrounded by the sea, Japan has long had a flourishing shipping industry. Vessel traffic was brisk with many vessels carrying all kinds of cargoes at once, supporting the everyday lives of the Japanese people. Ocean shipping has become indispensable in providing global logistics services that create a truly borderless world of trade.



Transporting and delivering energy resources, food, and essential products from all over the world to Japan, and from Japan to the rest of the world—this is MOL's ocean shipping business.

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What Do We Mean by "Ocean Shipping Industry"?

Ships are familiar to all of us, and play a major role.

Many of our daily necessities are transported by vessel, including food and clothing sold in your local stores, lumber and steel products needed for buildings, and oil, coal, and natural gas to provide energy. The business of using vessels to connect ports around the world and provide all of these everyday essentials is called "the ocean shipping business."



A large cargo ship may not be a familiar sight for you. But in fact, these vessels carry a great deal of cargo.



From the World to Japan and from Japan to the World Transporting All Kinds of Goods

Vessels have evolved to fulfill their mission of efficiently transporting huge volumes of cargo. While some cargo ships carry a variety of different cargoes, the mainstream in ocean shipping today is the use of "dedicated" vessels designed to transport a specific cargo, such as oil (tankers), iron ore (bulk carriers), and automobiles (car carriers).



If we didn't have ocean shipping, we wouldn't be able to eat curry rice!

Major exporting countries in parentheses ()



With few natural resources and low food self-sufficiency, Japan imports energy resources such as oil and natural gas, as well as foodstuffs like as grain and meat, from other nations. Most of these products are transported by vessels from all over the world to various parts of Japan.

The More You Know, the More Meet Mitsui O.S.K. Lines!

What Kind of Company Is Mitsui O.S.K. Lines?

Mitsui O.S.K. Lines, or MOL for short, is a multimodal ocean shipping group company that sustains the lives of Some people say, MOL is like an 'Ocean Shipping Supermarket'

But that's a little confusing, isn't it? So here are eight points that should make you more interested in learning



MOL ships call ports in more than 100 of the 145 countries in the world with a seacoast. Our ships connect various countries and regions, carrying goods and people.

Number of voyages per year



(Excluding containership voyages in FY2022)

Every year, MOL vessels make about 3,200 voyages between Japan and the rest of the world. MOL's vessels are in service all around the world today.



Our fleet totals about 900 vessels of various types, each tailored to the cargo it carries, plying routes all over the world.

Safety



MOL established the world's first "Safety Operation Supporting Center" that watches over all of our vessels 24 hours a day, 365 days a year, supporting the world's highest standards of operating safety.

Amazed You Will Be!

people in Japan and around the world.

more about us.

Annual container transport volume



MOL vessels carry about 7.7% of the world's marine cargo. (Source: Nippon Kaiji Center)

%FY2020 results %TEU stands for "twenty-foot equivalent unit" and is a standard measure for cargo volume, referring to the amount of cargo transported in a 20-foot container.

History Founded 1884

For 140 years since its founding, MOL has been contributing to the lives of people and the development of industry in Japan and around the world by crossing oceans and connecting countries. Number of vehicles transported per year



What Kind of Company is MOL?

In 1965, MOL launched Japan's first dedicated car carrier. Today, about 100 of these vessels export Japanese automobiles to the rest of the world.

Environment

Environmental and emission-free business to address global warming



MOL conducts ongoing research on environmentally friendly vessels and so on, as well as power generation projects that use the natural forces of waves and wind.

A Huge Collection of Vessels

All kinds of vessels carry all kinds of cargo and ply sea

Mitsui O.S.K. Lines' vessels carry an amazing variety of goods. Various kinds of vessels, each designed to safely We also have dedicated vessels built to perform special tasks.

Vessels carrying energy, resources, and products



Bulkships



Tankers



LNG carriers



Car carriers









Ferries



routes all over the world today.

transport specific types of cargo, call ports around the world every day.

Vessels fulfill essential roles in various industries

Specialized vessels that do more than just transport cargo



Powerships



Cable laying ship



Floating Storage and Regasification Unit (FSRU)

Vessels supporting offshore wind power generation



Self-Elevating Platform (SEP)



Service Operation Vessel (SOV)



Crew Transfer Vessel (CTV)

Vessels contributing to the sustainability of the Earth











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Vessels Transporting Energy,

Bulkships



Bulkships transport huge volumes of commodities such as iron ore, coal, grain, salt, aluminum, and copper ore without any kind of packaging. Bulkers come in all sizes and configurations, depending on the volume of cargo to be transported and the size of the port of call.

Tankers



Tankers carry liquid cargoes such as crude oil, refined petroleum products, and chemicals. MOL has a full fleet of large crude oil tankers of 200,000 DWT or more, as well as chemical tankers, methanol tankers, and other ships that can accommodate different cargoes. Sometimes, tankers also serve as offshore oil storage depots.

LNG carriers



These vessels carry liquefied natural gas (LNG). To transport natural gas, which liquefies at minus 161.5 degrees Celsius, tanks are made of special materials that can withstand ultra-low temperatures, and advanced technology is used to safely load and unload LNG. These ships also use gas that vaporized in the tanks as fuel.



Resources, and Products

Car carriers



These vessels load and transport self-propelled cargo such as automobiles and construction equipment. The hull of a car carrier has a multi-tiered deck structure, like multi-level parking lots. Depending on the size of the vessel, they can carry as many as 6,800 automobiles at once.

Containerships



These vessels carry cargo in international standard marine containers^{**}. Containerized cargo can be transferred directly to trucks or railcars for a smooth and speedy transition from sea to land transport.

%The types and sizes of containers, such as refrigerated containers and tank containers, are defined by a common global standard.



An Entire Train Can Travel by Sea!



Even large and long items that are difficult to transport by road, such as bullet train cars and express trains, can be easily transported by vessels on the open sea.

Vessels Carrying People and

Cruise ships



Cruise ships are not only a means of transportation, but also a fun way to travel. These ships sail through scenic vistas, occasionally slowing down to interact with marine animals, and passengers can enjoy fine dining, watch a show, or just relax and enjoy the ocean on the way to their destination.

Ferries



These versatile vessels carry passengers, passenger cars, trucks, and other cargo vehicles together. They also have private cabins, restaurants, and a public bath with a panoramic view of the sea. A ferry trip can be like a mini-cruise vacation!



Hotel-like suites



Passengers can enjoy a refreshing bath during their trip

Modal Shift is Friendly to both Drivers and the Environment

Ferries can solve two problems facing the long-distance truck transport business-driver fatigue and CO_2 emissions during transport can both be reduced. Using ferries to carry trucks over long distances significantly reduces environmental impact compared to relying on trucks for the entire journey. Switching from trucks to more earth-friendly means of transportation is called the "modal shift."





How Big Are These Vessels?

The vessels we are talking about here are called "merchant vessels," and some are as long as Tokyo Tower or Tokyo Station. Also, the distance from the bottom of the vessel to the top of the smokestack (called the "funnel") is about 65 meters, about as tall as an 18-story building. These massive vessels travel the world's oceans every day, and contribute to everyone's life.



Vessels Play Key Roles in Various

Special vessels do more than just transport things

Powerships



Powerships carry power generation equipment on board and serve as power plants that move around the ocean. Since they can travel virtually anywhere in the world by sea and meet various power needs, powerships are gaining attention as the power supply method of the future. Today, power is often generated using natural gas, which emits less CO2 than heavy oil, and liquefied natural gas (LNG) is sometimes supplied offshore from LNG carriers.

Cable-laying ships



These vessels lay, repair, and recover optical communication and power cables on the seabed. To lay submarine cables safely and accurately, cable-laying ships feature dynamic positioning system (DPS) to maintain a fixed position despite the motion of waves and wind. These vessels support our digital age, including the stable Internet service you rely on every day.

FSRUs



A floating storage and regasification unit, or "FSRU" serves as an offshore LNG receiving terminal. It receives, stores, and regasifies LNG. FSRUs serve the same purpose as land-based LNG terminals, but eliminate the costs of construction and can be moved to any location where they are needed.

Fields

Vessels Supporting Offshore Wind Power Generation

SEPs



SEP stands for "self-elevating platform," and in Japanese it is called an offshore wind turbine installation vessel. It can install wind turbines and other equipment necessary for offshore wind power generation. The hull can be raised above the surface of the sea, and the legs can be raised and lowered to allow safe and reliable operation, unaffected by wind and wave action.

SOVs



Service operation vessels, or SOVs, are used to transport technicians to maintain offshore windmills and power plants located far from shore. Technicians may not be able to return to shore immediately depending on the work schedule, so SOVs have rooms where they can stay overnight, a cafeteria to provide meals, and a gym. They also have DPS to absorb hull motions due to waves and wind, allowing them to safely hand off technicians to wind turbines offshore.

CTVs



While SOVs are used for offshore wind farms located far from land, Crew Transfer Vessels (CTVs) are used to dispatch maintenance technicians to wind farms that are relatively close to land. They can pick up and drop off about 12 to 24 technicians from the port where it is based. Fenders are attached to the bow of the vessel and press against the windmill to stabilize the vessel before allowing the technicians leave the CTV and enter the work site.

Vessels Are Essential in a Range

Vessels Contributing to the Sustainability of the Earth

Bulk carrier featuring the Wind Challenger sail



The Wind Challenger project was developed to convert wind power, a clean and renewable energy source, into propulsion for vessels. The project aims to bring sailing ships back to life in the modern age, using the latest technology, and to significantly reduce the fuel consumption and greenhouse gas emissions of large cargo ships.

Wind Challenger's "Sails" Are amazing!





It is important to minimize the weight of the sails so they don't the amount of cargo a merchant ship can carry. For this reason, the sails are made of a material called glass fiber reinforced plastic (GFRP). The lighter weight allows for a larger overall sail area, which improves propulsion. It also minimizes the effect of the sails on the ship's balance and enhances operational safety.

Ordinary sailboats need to adjust the angle and tension of their sails according to the strength and direction of the wind, and this requires a high level of knowledge and experience. The Wind Challenger's sails are automatically controlled, with sensors that detect the strength and direction of the wind, extend the sails if the wind is light, retract them if the wind is too strong, and automatically rotate them.



The world's first merchant ship with a Wind Challenger Click here to see a video of the Shofu Maru.

of Fields

EV tanker



This is the world's first tanker powered by electricity. It is powered by a large-capacity 3,480 kWh lithium-ion battery and is completely zero-emission.

The Asahi is a 62-meter-long tanker, and its home base is the Port of Kawasaki. It supplies fuel (heavy oil) to domestic and ocean-going vessels in Tokyo Bay.

When fully charged, it can sail a distance of 200 km. In the event of a disaster, it can be dispatched to remote areas and serve as a small power plant.

In addition to superior environmental performance, the electric power system is also expected to reduce the crew's workload by eliminating the maintenance work required for conventional engines.

Liquefied CO₂ carrier



Transport Compression/Storage CO₂ capture and liquefaction Liquefaction Canture Liquefied CO₂ carrier Compression equip Capture and liqu emitted CO2 Transporting liquefied CO₂ by vessel Compressed CO₂ is transferred to the storage area by pipeline

Liquefied CO₂ carrier conceptual diagram

Carbon dioxide capture utilization and storage (CCUS) is attracting attention as a means to achieve a low-carbon, decarbonized society. Liquefied CO₂ carriers will play an important role in the carbon-neutral society of the future by transporting captured and liquefied carbon dioxide (CO₂) to storage and utilization sites.

To flexibly respond to various transport needs, a variety of ship types and dual-purpose carriers that can also transport next-generation clean energy resources are being studied and evaluated.

Meet the People who Work on Vessels MOL TEAM

The work of people at MOL who support the global economy.

Becoming "ONE TEAM" with business experts (Business TEAM) seafarers (Seafarer TEAM), and engineering specialists (Engineering TEAM). Our ships carry all kinds of cargoes to support the world economy



The job of Business TEAM① Connecting the World's Oceans



The job of Business TEAM² Supporting ship navigation



The job of Technical TEAM^① Building new vessels



The job of Technical TEAM^② Developing new ship technology



Connecting the world through transport services

Business TEAM① is responsible for dealing with resource and energy companies around the world, as well as manufacturers of food, cars, and other products we transport.

This job involves making important decisions on the actual cargo to be transported, such as the amount to be carried, the time period, and the negotiation of freight rates.

Working closely with the ship's crew to safely deliver cargo

The job of Business TEAM⁽²⁾ is to plan the voyage, for example, instructing the ship how much cargo to load, how much fuel to acquire, which ports to sail to, how fast to sail, and so on. We make various arrangements during daily contact with the captain, but our first priority is to ensure safe operation, and we work with the crew to ensure the safe, reliable transport of the cargo.

A job that involves all aspects of the birth of a vessel

Engineering TEAM① is in charge of designing and approving drawings for new vessels, considering their basic requirements (e.g., high safety, low environmental impact and high fuel efficiency, ease of use for the crew who will operate the vessel, and so on). Once construction of the vessel begins, a team member is stationed at the shipyard as the construction supervisor to control quality and processes.

Developing cutting-edge technology that contributes to the advancement of the shipping industry.

Engineering TEAM(2) is responsible for developing new technologies that will lead the world's shipping industry. As you read earlier, we are developing vessels equipped with sails that utilize wind power, as well as vessels that run on environmentally friendly fuels that do not emit carbon dioxide (CO₂). Engineering TEAM(2) contributes to the progress of the entire shipping industry with technology that meets the needs of the times.

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Meet the People who Work on Our Vessels



Experts in Navigating Huge Vessels and Delivering Cargo Safely to Port

This job involves assisting the captain, who is in charge of the vessel, in safely navigating the vessel. and safely delivering cargo to customers. The navigator's main tasks are navigation and cargo handling, based on the voyage plan.

The job of a Navigation Officers① Navigator

Setting the vessel's course and ensuring safe and optimal navigation



Navigation Officers plan the voyage route, and decide the vessel's optimal course to its destination. They oversee all aspects of navigation, including maintenance and inspection of radio equipment and instruments.

The job of a Navigation Officers² Cargo handling

Protecting your valuable cargo



A Navigation Officers is also responsible for the safe delivery of the precious cargo entrusted to us by our customers, from loading to onboard maintenance and safe unloading at the port.



the navigator.

.....

Meet the People who Work on Our Vessels



Seagoing professionals who operate the heart of the ship, the engines, and support onboard life

Engineers must respond to all kinds of problems with onboard equipment to support the vessel's navigation. They operate and maintain the engines and other power equipment, as well as various other onboard equipment and facilities.

The job of an engineer①
Operation

Protecting your valuable cargo



Engineers manage the main engine, which is the driving force of the vessel, as well as auxiliary equipment such as generators and boilers to keep them running smoothly at all times.

The job of an engineer Maintenance and inspection

Protecting onboard equipment and facilities



Engineers must know all about not only the main engine and auxiliary engines, of course, but also the wide array of electrical, water, steam, and other equipment that is essential to navigation, monitoring and maintaining them so they function properly at all times.



000 LNG

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Thoughts from MOL

From the blue oceans, we sustain people's lives and ensure a prosperous future.

Vessels that carry resources and products. Vessels that carry people. Vessels that perform various tasks at sea. The term "ocean shipping" encompasses a wide variety of vessels. Even though the size and shape of each vessel may differ, the fact remains that people's lives are affected by every voyage.

We are committed to connecting the world via the oceans and contributing to prosperous lives for people all around the world.



Safe operation to protect life, trust, and the blue oceans

The first priority of vessel safety is to protect the lives of the crewmembers as well as the cargo entrusted to them. But there is so much more. For example, an incident involving an oil tanker can lead to an oil spill that pollutes the marine environment. MOL is committed to the world's highest level of safety in ship operations through daily training and 24/7 monitoring of vessels by the Safety Operation Supporting Center(SOSC).



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To Everyone who Loves the Ocean and Vessels

We are sure that everyone who has picked up this book is a lover of the ocean and vessels. When we think about the future of society, industry, and the global environment from the wide open sea, we come to appreciate many things that we would never have recognized on land. MOL has gained a vast storehouse of knowledge that will help us open up the next era through our ocean shipping business. We will continue to move forward, always remembering and expressing our gratitude to the ocean.

We will be extremely happy if this book helps you fall in love with the ocean and vessels even more.









MitsuiO.S.K. Lines

Job Exploration Book

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The book is printed with "zero CO2 printing," which is 100% renewable energy and carbon offsets (offsets) all CO2 emitted during the production of energy, including equipment and vehicles owned by the printing factory and purchased electricity. The book also uses non-VOC inks that reduce volatile organic compounds (VOCs), which are a cause of air pollution.